



THE BEAN BAG

A newsletter to promote communication among research scientists concerned with the systematics of the Leguminosae/Fabaceae.

Number 24

Nov. 1986

From the Editors

Charles R. Gunn and Joseph H. Kirkbride, Jr.

Because we have depleted our supply of May, 1986, Directories, we are enclosing a revised Directory with this issue. This new format will be used in future Directories. Readers' full name, address, and often their legume speciality are listed in this Directory. If your specialty is not listed or you wish to change your listing, please let us know as soon as possible.

The BB is designed to promote communication among research scientists concerned with legume systematics. To achieve this goal the BB is issued in May and November of each year and usually features six columns: From the Editors, News (meetings, major events, announcements, etc.), Corrections for Last Directory, New Readers, Gleanings, and Recent Legume Literature. Data in the Gleanings column are derived from questionnaire sheets which the Readers complete and return. The Recent Legume Literature column contains published research papers of specific interest to a worldwide group of legume systematists. If a Reader's name is used in the BB, it will be typed in all capital letters. The last name of a nonreader is typed with only an initial capital letter.

Will Dr. Louis please write to the Bean Bag.

Bean Bag address: SBM & NL, Bldg. 265, BARC-East,
Beltsville, MD 20705 USA.

IV LATIN AMERICAN BOTANICAL CONGRESS REPORT

Joseph H. Kirkbride, Jr. and Marli Pires Morim de Lima

The IV Latin American Botanical Congress was held in Medellin, Colombia, from 29 June through 5 July 1986. Eight papers were presented dealing with various aspects of the taxonomy, morphology, palynology and development of the Mimosoideae.

A meeting of Latin American Mimosoideae specialists was held during the evening of July 3rd. Most of the meeting was chaired by Enrique FORERO. M. P. Morin de Lima summarized work being carried out in the main centers of study for the Mimosoideae: Latin America, North America, Europe and Australia. A list of genera under study organized by country was presented; it was prepared from sources such as the Bean Bag, Boletín Botánica Latinoamericana, etc. It was emphasized that some genera were being studied in various centers either on a regional basis or from different aspects and that these studies should be integrated. E. FORERO presented a list of taxonomic studies in progress on Neotropical members of the Mimosoideae. The majority of these studies deal with fewer than 50 species each, and therefore can not be published in Flora Neotropica. He suggested coordination of these studies to combine two or more small genera into a single volume of Flora Neotropica. He also proposed the establishment of a newsletter for Latin American Mimosoideae workers. It was suggested from the floor that such a vehicle already exists in the Bulletin of the International Groups for Study of Mimosoideae, but the majority of those present supported a new newsletter. R. Allkin presented the objectives, structure and progress of the International Legume Database and Information Service (ILDIS) and solicited the assistance of all attendees in its construction. J. L. ZARUCCHI discussed TROPICOS, the database being constructed at the Missouri Botanical Garden for vascular plants and mosses. He also presented the group with a copy of his Towards a Checklist of New World Legumes which contains the names of 5,972 Neotropical taxa and their distribution in the New World derived from bibliographical sources. The attendees were requested to review the checklist and submit additions or corrections to ZARUCCHI.

It was agreed to organize at the national and regional levels; the following persons are national representatives: M. P. Morin de Lima (Brazil), M. Pinto (Chile), C. E. Barbosa C. (Colombia), R. G. GRETHER (Mexico) and L. Cardenas (Venezuela); and the regional coordinators are: M. P. Morin de Lima (South America) and R. G. GRETHER (Mexico and Central America). The following persons attended the meeting: R. Allkin, C. E. Barbosa C., M. A. Caccavari, A. Fernandes, M. S. Fernandes Silvestre, E. FORERO, R. H. Fortunato, P. S. HOC, J. H. KIRKBRIDE, Jr., G. P. LEWIS, A. L. MESQUITA, S. T. S. Miotto, R. MONTEIRO, M. P. Morim de Lima, R. A. PALACIOS, Z. Pineros de Santana, M. Pinto, L. M. Quinones, J. T. ROMEO, R. Ruiz, D. M. Teixeira, and J. L. ZARUCCHI.

PLEASE LOOK FOR YOUR NAME HERE

If you name is listed here, please let the Bean Bag know your legume specialty which must start with a scientific name for our sorting to work correctly. Consult specialty sort at end of November Directory for examples.

Abdel-Hafez, A. G.	Niyomdham, Dr. Chawalit
Bawa, Dr. Kamaljit S.	Pillay, Mr. Michael
Benepal, Dr. P. S.	Podlech, Dieter
Bleiler, John	Pratt, Dr. Richard C.
Bravo, Dr. Lilia Dora	Quagliaroli, Lisa
Brenner, Mr. D.	Rabakonandrianina, Elisabeth
Brubaker, Mr. Curt	Radhakrishnaiah, M.
Brugginle, Wietse	Rao, Dr. Sujatha
Carter, Annetta M.	Reinsvold, Rob
Castro, Maria Agueda	Reuteria, Enrique
Christian, Prof. James A.	Rodas, Reinilda Dure
Cialdella, Lic. Ana Maria	Rodman, Dr. James E.
Citharel, Dr. L.	Ruiediaz, Rosa Aida
Clemons, Ernest	Russo, Ricardo O.
Crosby, Marshall R.	Santos, Dr. Arnoldo
Debouck, Dr. Daniel	Schonenwels, Susan
Doyle, Dr. Jeff J.	Seigler, Prof. David S.
Farooqui, Dr. S. M.	Sharma, Dr. Gopal K.
Fortunato, Renee H.	Shawe, Mr. Keith
Ganeshaiiah, Dr. K. N.	Shivashankar, Dr. G.
Gubbels, Marco	Singal, Dr. Shiv Kumar
Guevara, Lourdes C.	Storbeck, Timothy A.
Hale, Dr. C. N.	Stritch, Dr. Lawrence R.
Hannon, Dylan	Studart D. F. Vaz, Angela M.
Heslop-Harrison, Prof. J.	Styles, Dr. Brian
Hidalgo, Rigoberto	Swain, Barbara
Holle, Dr. Miquel	Tryba, Sue E.
Huxley, Dr. Peter	Tucker, Dr. Shirley
Iyer, V. N.	Turner, Mr. Glenn W.
Jarema-Karcz, Jagna	Turner, Prof. B. L.
Jayawardhane, Mr. E. A. A.	Turner, Raymond M.
Keighery, Dr. G. J.	Ulubelde, Macit
Kohl, Prof. Danny	Vakili, Dr. N. G.
Lakshmann, Dr. K.K.	Van Staden, Prof. J.
Leon, Dr. Jorge	Vassal, Dr. Jacques P. J.
Lievens, Alan W.	Vieira, Maria Das Gracias
Luckow, Melissa	Vilchez, Oscar
Maas, Marc	Wainwright, Dr. Colin McClain
Maheshwari, Dr. J. K.	Wijayaratne, Rohini
Mascherpa, Dr. Jean-Michel	Windler, Prof. Donald R.
McNeill, Dr. John	Wiriadianta, Dr. Harry
Menendez Sevillano, Maria del C.	Wu, Dr. Telin
Mesquita, Antonio Lima	Wu, Dr. Zheng-Yi
Milten, Sue J.	Xu, Dr. Ren
Mitchell, Mr. R.	Yatazawa, Dr. Michihiko
Moncur, Michael	Yopp, Dr. John H.
Mott, Dr. Gerald O.	Yu, T. T.

THE INTERNATIONAL ORGANIZATION OF PLANT BIOSYSTEMATICS (IOPB)
by William F. Grant

An open business meeting of the International Organization of Plant Biosystematists was held during the five day IOPB Symposium "Differentiation Patterns in Higher Plants" which was organized by Krystyna Urbanska and held at the Eidgenossische Technische Hochschule (ETH), Zurich, Switzerland, July 13-18, 1986.

The President (Prof. William F. Grant, McGill University, Montreal) told of the continued interest in the activities of IOPB and the many favorable comments he had received on the holding of IOPB Symposia. He also stated that he had been receiving very high praise for the fine production of the IOPB Newsletter under the Editorship of Krystyna Urbanska and for the information which she was gathering for the Newsletter from botanists around the world.

Dr. Liv Borgen, Secretary-Treasurer, reported that membership was steadily increasing and stated that she looked forward to many more new members as additional activities were undertaken. Membership fees for the three years 1987-1989 (between Symposia and change of Executive) is U.S. \$20. New members and renewals of membership may be sent directly to Dr. Liv Borgen (Botanical Garden and Museum, University of Oslo, Trondheimsveien 23B, 0562 OSLO 5, NORWAY).

Prof. Krystyna Urbanska, Editor of the IOPB Newsletter, said that issue No. 6 had just been distributed and that anyone with contributions for Newsletter No. 7 should send them to her before November (Dr. K. Urbanska, Geobotanisches Institut, Stiftung Rubel, Zurichbergstrasse 38, CH-8044 Zurich, Switzerland). She stated that a report on the highlights of the Symposium with summaries of the presentations by the Invited Speakers would be in the next issue. Members of IOPB automatically receive the Newsletter.

Prof. C. A. Stace (Department of Botany, University of Leicester, Leicester LE1 7RH, England) stated that the IOPB Newsletter would be an excellent place to report genomic and cytogenetic data, such as DNA density measurements, nucleotypic associations, species which have special chromosome markers, species on which chromosome banding are being carried out, species on which restriction mapping are being carried out, etc. in addition to chromosome numbers of species and hybrids. He offered to collect data and compile for the Newsletter. Please send your data to Prof. Stace for inclusion in the next IOPB Newsletter.

An invitation has been accepted by the Japanese botanists to hold the next IOPB Symposium in Japan. Prof. S. Kawano (Department of Botany, Kyoto University) stated that the Symposium would be held in Japan in 1989 and that he would be working with his botanical colleagues to make it a highly successful meeting. Details concerning "IOPB 1989" symposium will be published in the IOPB Newsletter.

Under future items for IOPB to consider, Prof. F. Ehrendorfer (Institut fur Botanik, Vienna) stated that IOPB might sponsor "Workshops on Techniques", such as advances in cytology, electrophoresis, etc., and that he would be willing to hold a one week workshop on cytological techniques at his Institute. Anyone interested in participating or holding a workshop is requested to write to Prof. Grant who will try to coordinate such a workshop.

A decision of the Executive and Council was to shorten the term of office of the Executive and Council from between International Congresses of Botany (5 to 6 years) to between IOPB Symposia which are now being held every three years. As a result, a Nominating Committee was established to solicit names for a mail ballot for Vice-President and ten Council members (no more than two persons from any one country). The Nominating Committee consists of B. A. Barlow (Australia), E. Pogan (Poland), I. Fukuda (Japan), C. A. Stace (Great Britain), D. Cartier (France), K. L. Chambers (U.S.A.), C. C. Chinnappa (Canada), and the Executive ex officio. Suggestions of names should be sent to any member of the Nominating Committee. A ballot will be sent out prior to the International Botanical Congress and the names of the new Executive and Council Members will be announced at an Open Meeting of IOPB during the Botanical Congress 24 July to 1 August 1987.

The Executive considered that an "Award" be presented to an outstanding "Biosystematist" at the next IOPB Symposium in Japan. The Nominating Committee was charged also with this task. Names for consideration should be sent to any member of the Nominating Committee or the Executive.

As there was no further business, the President turned the meeting over to the incoming President, Krystyna Urbanska.

ILDIS PROGRESS REPORT, JUNE 1986

by Frank Bisby

The ILDIS (International Legume Database & Information Service) Project held 2 1/2 days of workshop and meetings at St. Louis on June 19-21st, immediately before the Second International Legume Conference. The first year of the project has seen steady progress towards ILDIS's first objective: The production for 1989 of a database of checklist, geographical and 'common knowledge' data for all known legume species of Africa, the Americas, and Europe. This is being achieved by the production of initial checklists at RBG Kew (Africa), Missouri Botanical Garden (the Americas), and Reading (Europe) followed by detailed editing by the coordinators responsible for taxonomic consistency in each legume tribe. Planning is also going ahead for the extension of this database to legumes of the remaining continents, and the development of more detailed botanical and agronomic data about the species in economically important tribes. Further details of the ILDIS project are available from: Dr. Sue Hollis, ILDIS Coordinating Centre, Biology Department, Building 44, University of Southampton, Southampton, SO9 5NH, GREAT BRITAIN.

REPORT OF II INTERNATIONAL LEGUME CONFERENCE

by Roger M. Polhill

The 'Biology of the Leguminosae' was the theme of the Second International Legume Conference, held at the Missouri Botanical Garden, St. Louis, U.S.A., 23-27 June 1986. This was a very successful and stimulating meeting because it had been prepared carefully over three years, the research had been co-ordinated to evaluate a synthetic approach to the subject, a wide range of experts had been enlisted as speakers or discussion leaders, and the conference was superbly organized by the Missouri Botanical Garden for about

240 delegates from 25 countries. [Thirty eight papers and approximately 105 poster papers were presented.]

The conceptual framework of the meeting was devised by Charles Stirton in terms of a General Biosystems Theory. He traced the origin of this from three closely connected theories - General Systems Theory, Biocybernetics and Ecosystemology. The essential point is to take a holistic view. The practical implication is to look at the interaction of environmental and developmental factors to unravel the constraints that have optimised selection in plants as we know them to-day. The consequence is that research programmes must increasingly cross traditional disciplines to understand the seemingly endless strategies by which plants and animals have exploited the compromises open to them.

In considering the success of legumes, whether in terms of speciation, diversity or distribution, the point was repeatedly made that legumes lack unique features, but are extremely versatile in their response to stress, involving many economic ways to augment a competitive ability without irreversible specialisation. They are essentially generalists, though several of the life histories explored showed strikingly how constraints accumulate in various systems to channel evolution into remarkable and often quite unexpected levels of adaptation.

More attention was given to growth patterns of vegetative shoots and inflorescences than hitherto, and a little physiological ecology was elucidated in relation to carbon, nitrogen and water budgets. The fruit, for example, has several interesting structural features that interact to give high performance in terms of water consumption, conservation of carbon resources and mobilization of nutrients from pericarp to seeds.

The evolution of rhizobial relationships has been significantly revised from an investigation of systems in tropical woody legumes. The commonplace occurrence of infection threads and entry of bacteria via root hairs is not found in primitive legumes and is now thought to be a derived condition. The occurrence of ectomycorrhizae has been clarified considerably. Contrary to previous speculation ectomycorrhizae appear to be absent from most Detarieae, but are general in Amherstieae and only a few other genera. Ectomycorrhizal trees form a coterie from which others are excluded as effective competitors for nutrients, hence the tendency to form low density stands in South America and especially in tropical Africa, where other families of ectomycorrhizal trees are not prevalent.

Floral and dispersal biology profited from a better understanding of the tight evolutionary constraints on basic mechanisms, coupled with peripheral specialization to a notable degree. This pattern is apparent in ontogeny, where the characters laid down earlier in floral development tend to be markers of higher levels in the systematic classification. The extensive work on pollen in recent years has been extended to a broader consideration of stigma interactions and adaptations to pollinators. In general simple flowers have evolved precautions to receive appropriate pollen, whereas more specialized flowers partition pollinators more effectively.

The interaction with pests and symbionts was explored further, involving new chemical discoveries and new technology for investigating the relationships. Much work has been done on the predation of legume seeds by bruchids, relating almost exclusively to the role of compounds that accumulate inside seeds, but there is complexity too in the needs and sensitivity of bruchids to chemical stimuli for locating, feeding, ovipositing and counteracting the plant's defences that have a bearing on host selection and bruchid specialization. Interactions were similarly explored in relation to

aphids. Ants disperse seeds particularly, in open habitats prone to fire, low nutrient availability and high seed predation on bare ground. Quite separately they are attracted by commonplace extrafloral nectaries and provide a defense of reproductive organs especially in herbs (mostly Papilionoideae) and vegetative parts of longer-lived Caesalpinoideae and Mimosoideae. True myrmecophytes, with an obligate mutualistic relationship, also occur in all three major tropical areas.

The importance of adaptive features, considered as multifunctional complexes, were stressed both in discussions of generic evolution and in the domestication of pulses, with an indication of how preadaptations may accumulate to permit marked further shifts in form and function. The costs and benefits of woody legume introductions provided the focus for practical discussions on agronomics and conservation. The most readily established legumes may become noxious invaders.

Of practical significance also was the concerted effort to establish a database of plant diversity in legumes that can be operated on readily available microcomputers worldwide. Significant progress has been made in devising a taxon-based checklist of all legumes, and modules were under consideration for more detail on economically important species for identification, utilization and reference to salient literature. Such an undertaking involves a high level of collaboration between specialists in different disciplines and in various tribal groupings of legumes.

The collaborative spirit and the possibility of expanding knowledge by concerted interdisciplinary and international research programmes opened new vistas. Certainly ecological physiology, biogeography, DNA analysis and their broad systematic implications should figure in future programmes. The mantle of responsibility to expand these horizons presents an interesting challenge.

The proceedings of the Conference will be published by the Missouri Botanical Garden in 1987. [See STIRTON and ZARRUCHI in Recent Legume Literature.]

GLEANNINGS

BANKS (new Reader) is working on breeding, genetics, and evolution of *Arachis*. Needs primitive land races of *Arachis* and various new *Arachis* spp. collections. Offers *Arachis* spp. germplasm.

BEINHARDT (new Reader) has started studies of floral biology of *Acacia* in SE Australia, and coevolution of bees and papilionoids.

BISBY (See DELBOS).

BROCKWELL with others has paper in press on two species of *Hedysarum* grown in Morocco and their homologous rhizobia.

COWAN (new address) is studying *Psoralea* of Australia for the Flora of Australia.

DELBOS is data banking information about *Lathyrus heterophyllus*, L. *latifolius*, L. *sativus*, L. *syvestris*, and L. *tuberosus*. Other species of *Lathyrus* will be data banked by BISBY. Needs seeds and local data about the species named and offers seeds of these species from France.

DILCHER and HERENDEEN are surveying legume leaflets and fruits from Ecocene Age sediments of western Kentucky and Tennessee, USA.

EVANS (Dale) has started studying cropping systems interrelations between legume trees/shrubs and associated crops. Has in press with P. A. Rotar a book on *Sesbania* in Agriculture. Needs seeds of *Sesbania* spp. from Africa and Asia, especially, seeds from more than one plant of a given species in an area. Offers research quantities of seeds from an international collection of *Sesbania* spp.

FELLOWS needs seeds and leaves of *Baphia* spp. and offers seeds of several *Lonchocarpus*, *Millettia*, and *Tephrosia* spp.

GILL is studying germination of seeds of *Acacia* spp. and *Mimosa pigra*. Needs wood samples from New World legumes and offers seeds of Nigerian legumes.

GUNN worked in (BISH), (BRI), (CANB), (CBG), (CHR), (MO), and (NSW) this past summer. Has typescript on fruit-seed morphology of the *Caesalpinioideae* out for peer review. See insert with this issue of BB for information on recently published book with R. J. Delorit: "Seeds of Continental United States Legumes (Fabaceae).

HARDER (new Reader) has started study of tuber formation and reproductive biology of *Psophocarpus*. Needs *P. palustris* and *P. scandens*.

HEREDEEN. See DILCHER.

HUGHES offers seeds of Central American tree legumes and 10 *Leucaena* spp. Has in press a new sp. of *Leucaena* from Guatemala.

HUSAINI is studying the cyto-morphology of the legumes of northern Nigeria. Needs reprints on legume chromosome numbers and related subjects. Offers seeds and reprints of his research.

JOHNSON needs bruchids reared from seeds and offers seeds from Colombia, Venezuela and Ecuador.

KOPTUR (new Reader) is studying the ecology of *Inga*.

LAVIN offers wood samples of *Diphysa*, *Hesperothamnus*, *Gliricidia*, and *Coursetia*.

LEEN (new Reader) is studying biological control of *Genista* and *Cytisus*. Needs seeds of *Genista canariensis*, *G. monspessulana*, and *G. stenopetala*.

LEWIS has started his dissertation on neotropical *Caesalpinia*. Needs *Caesalpinia* seeds, herbarium specimens, and flowers fixed in FAA. Will identify neotropical legumes.

MARMILLON (new Reader) is working on breeding of *Prosopis* and *Cyamopsis tetragonoloba* and is creating a seed bank. Needs papers on *Prosopis*, especially, cytogenetics and genetics. Offers seeds of *Prosopis alba*, *P. argentina*, *P. chilensis*.

MISSET needs *Ulex europaeus* seeds from all countries.

MOSS (new Reader) is preparing to collect genetic material of wild African *Vigna* spp. by surveying herbaria and literature. Welcomes material on subject, especially, forage potential and gene pools.

NEILL is currently working in lowland Amazonia Ecuador, collecting for a Spanish language floristic treatment of native trees to be completed in 1988. A number of new taxa have been collected over the past one and one-half years. Will try to fill requests for specialist sets (gifts for determination), seeds, fixed buds, etc. of legumes.

RAINA needs seeds of *Vicia* and *Vigna* spp.

RODRIGUEZ-CARRASQUERO (new address) has started a five year study of the legumes of the Venezuelan Andes. Offers plants for legume literature, especially, from Latin America.

ROMEO (new Reader) has started to study non-protein amino acids of *Inga* and continues studying chemotaxonomy of *Calliandra*.

SAINT-MARTIN needs seeds from the tribe Sophoreae.

SIMPSON (new Reader) is studying *Caesalpinia* section *Pomaria* and eventually *Hoffmannseggia*. Needs viable and vouchered seeds of *Caesalpinia* and offers specimens of various other species.

SOLADOYE (new Reader) is preparing a checklist of Nigerian legumes. Urgently needs *Baphia* material. Needs data on tropical legume germplasm and legume material from Africa and Madagascar.

STIRTON needs seeds of *Ateleia* and *Cyathostegia* and flowers and inflorescences in FAA of *Ateleia* and *Acosmium*.

STUCKY (new Reader) is studying taxonomy of North American *Sesbania* spp. Needs viable, vouchered seeds of *S. bispinnosa* from North America (including Mexico and West Indies), *S. emerus*, *S. exasperata*, *S. sericea*, and *S. seaban*. Also needs *Sesbania* material from Old World. Offers viable vouchered seeds of *Glottidium vesicarium*, *Sesbania exaltata*, and *Daubintonia punicea* from SE USA. Offers legume material from Piedmont and Coastal Plain of Carolinas.

TAYLOR (new Reader) is working on "Fabaceae: A taxonomic bibliography." May be able to help with identification of legumes from Madagascar.

THOMPSON is studying *Lysiloma* and offers to identify any *Lysiloma* for a vouchered specimen.

VAN DER MAESEN is revising *Dunbaria* and *Flemingia*. Needs seeds and fresh material of *Cajanus* s. l., *Dunbaria*, and *Flemingia* from Asia and Africa. Offers legumes and other families from Africa.

VIDAL reports that the revision of the Papilionoideae for the Flore du Cambodge-Laos-Vietnam (except *Dalbergieae* and *Tephrosieae*) by Nguyen van Thuan

and Mrs. Dyphon is completed and ready for printing. The revision of Dalbergieae and Tephrosieae will follow.

VIJAYALAKSHMI needs different varieties of *Psophocarpus tetragonolobus* and offers Indian varieties.

WEBERLING is studying the morphology of inflorescences and growth forms of legumes.

WOODS is studying *Apios* and *Cochlianthus*.

RECENT LEGUME LITERATURE

[Ed. Note: Author names in all capital letters are BB Readers. Their full names and addresses are listed in the November, 1986 BB Directory. Correspondence about these articles should be sent directly to them.]

Baker, R. T., T. L. Bridges, and L. H. Bragg. 1985. Pleurograms and seed surface patterns on some Mimosoideae Leguminosae genera. *Scanning Electron Microscope* 1985(2): 803-810.

Carvalho-Okano, R. M. D., H. D. F. Leitao Filho. 1985. Taxonomic revision of genus *Calopogonium* (Leguminosae: Lotoideae) in Brazil. *Rev. Bras. Bot.* 8(1): 31-46. [4 spp. recognized.]

Chriki, A., COMBES, and M. Marrakchi. 1986. Genetic control of conversion of dihydroflavonols into anthocyanins in flowers of *Hedysarum carnosum* Desf. *C. R. Acad. Sc. Paris* 302(16): 585-588.

CITHAREL and CITHAREL. 1986. Comparative studies of the sub-unit composition of the albumins, vicilins and legumins of isolated protein bodies from cotyledons of dry seeds of two members of Leguminosae: *Cytisus scoparius* (L.) Link and *C. scoparius* ssp. *maritimus* (Rouy) Haywood. *New Phytol.* 102: 65-72.

GILL and HUSAINI. 1985. Cyto-geographical study of genus *Sesbania* Scop. (Leguminosae) from Nigeria. *Bull. Mus. Natn. Hist. Nat. Adansonia* ser. 7, sect. 3, 3:331-336.

GILL and HUSAINI. 1985. Cytology of some arborescent Papilionoideae (Leguminosae) of southern Nigeria. *Boll. Soc. Brot.* ser. 2, 58:187-200.

Granby, R. 1985. Revision of the genus *Amphithalea* (Fabaceae: Liparieae). *Opera Bot.* 0(80): 1-34.

Hammer, K., HANELT and C. O. Lehmann. 1986. Genetic resources and diversity of *Vicia faba*. *Biol. Zentralbl* 105(1/2): 199-205. [This volume contains the proceedings of Third International *Vicia faba* Review Meeting held at Buchenberg, German Democratic Republic, in April 1985. 23 papers edited by R. Rieger under the general title Genetics and Breeding of *Vicia faba*.]

HUSAINI and GILL. 1985. Cytomorphological study of the genus *Crotalaria* L. (Leguminosae) from Nigeria. *Boll. Soc. Brot.* ser. 2, 58: 149-172.

- HUSAINI and GILL. 1985. Cyto-geography of arborescent species of Caesalpinioideae (Leguminosae) from Nigeria. Jour. Tree Sci. 4: 7-14.
- HUSAINI and GILL. 1986. Cytology of the tribe Dalbergieae (Leguminosae) from Nigeria. Feddes Repertorium 97: 469-473.
- Janardhanan, K. and LAKSHMANAN. 1985. Studies on the pulse *Mucuna utilis*: Chemical composition and antinutritional factors. Jour. Food Sci. & Tech. 22: 369-371.
- JOHNSON. 1985. Potential useful tropical legumes and their relationships with bruchid beetles. In K. C. Misra (ed.): Ecology and Resource Management in Tropics, V. 1. Silver Jubilee Symposium. International Society for Tropical Ecology. Bhargava Book Depot, Varanasi, India.
- Karatela, Y. Y. and GILL. 1985. Structure and ontogeny of stomata in the foliar organs in some Nigerian *Cassia* species (Leguminosae). Iselya 2: 121-127.
- Karatela, Y. Y. and GILL. 1985. Unusual stomatal features in *Leucomphalos capparideus* Benth. ex Planchon (Papilionoideae). Feddes Repertorium 96: 393-395.
- KNOX et al. 1985. Extrafloral nectaries as adaptations for bird pollination in *Acacia terminalis*. Amer. Jour. Bot. 72(8): 1185-1196.
- KOPTUR. 1985. Alternative defenses against herbivores in *Inga* (Fabaceae: Mimosoideae) over an elevation gradient. Ecology 66(5): 1639-1650.
- LANGENHEIM et al. 1986. Hymenaea and Copaifera leaf sesquiterpenes in relation to lepidopteran herbivory in southeastern Brazil. Biochem. Syst. Ecol. 14: 41-49.
- LANGENHEIM et al. 1986. Leaf development in the tropical leguminous tree *Coprifera* in relation to microlepidopteran herbivory. Biochem. Syst. Ecol. 14: 51-59.
- LEWIS and GUINET. 1986. Notes on genus *Gagnebina* (Leguminosae: Mimosoideae) in Madagascar. Kew Bull. 41(2): 463-470.
- MONTEIRO. 1986. Notes on tribal classification of *Lupinus* L. (Leguminosae: Papilionoideae). Eugenia number 11: 3-7. [In Portuguese with English summary.]
- MONTEIRO. 1986. Endemism of unifoliolate species of *Lupinus* L. (Leguminosae) in Brazil. Eugenia number 11: 8-13. [In Portuguese with English summary.]
- Narayan, R. K. J., C. Ramachandran, and RAINA. 1985. Distribution of satellite DNA in chromosome complements of *Vicia* spp. (Leguminosae). Genetica 66: 115-121.
- OHASHI and T. Nemoto. 1986. Branching system of *Desmodium triflorum* (Leguminosae). Jour. Jap. Bot. 61(1): 15-21.

- PACLT. 1985. Obligatorische Nodosität im Pflanzenreich. *Phyton* (Austria) 25: 219-223.
- RAINI, P. K. Srivastav, and S. Rama Rao. 1986. Nuclear DNA variation in *Tephrosia*. *Genetica* 69: 27-33.
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